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**TOWARD A TYPOLOGY OF HMOS REFLECTING
FINANCIAL INCENTIVES TO PHYSICIANS**

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Abstract

The prevailing typology of HMOs does not adequately distinguish among these entities. In order to develop a better typology, we surveyed HMOs regarding the financial incentives that they give their physicians. Financial incentives reflect fundamental differences among HMOs in the way they are organized and in how they contract with physicians. The responding HMOs (N=260) had a majority of the enrollment in the industry.

Many HMOs do not directly pay physicians, rather they pay a middle tier, which in turn pays physicians. These three-tiered HMOs capitate their middle tiers for primary care services and often for referral services. The middle tier then pays its physicians salary, capitation, or fee-for-service. Whether it has two or three tiers, an HMO may create a risk pool of physicians. In Individual Practice Associations (IPAs) subdivided into several risk pools, those pools average 30 physicians; in IPAs with all its physicians in one pool, those pools average 15 times as many physicians.

We consider two alternatives to Interstudy's typology of HMOs. Both alternatives differentiate IPAs subdivided into several risk pools and IPAs with a single risk pool. One alternative typology classifies IPAs by how physicians are paid (salary, capitation, and fee-for-service); the other classifies IPAs by the number of tiers. Both alternative typologies better distinguish HMOs by performance measures—such as specialty visits per enrollee and enrollment growth—than does Interstudy's typology.

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I. INTRODUCTION

The goal of a typology of HMOs is to define subgroups in which the constituent HMOs have similar characteristics. A successful typology would facilitate the dialogue among managers, patients, providers, and scholars, as they seek to understand how HMOs operate, which ones are successful, and which factors are critical to the industry. For example, there is common understanding that a "staff model" HMO refers to an organization that employs and controls physicians directly and pays them salary. Thus, the "staff model" is a useful term for a group of HMOs with certain common characteristics. Unfortunately, there is little agreement about the rest of the prevailing typology of HMOs—group models, network models, and IPA models. Because these terms mean different things to different people, the typology may contribute to people's misunderstanding of the industry, rather than clarify it.

We believe that there are better ways to classify HMOs that reflect fundamental differences among HMOs, as they have evolved. These basic differences among HMOs are reflected in the contractual agreements between the legal HMO entity and the primary care physician, who delivers or authorizes the delivery of most medical services. The centerpiece of these contractual agreements is financial incentives, including the organization of the risk pool. In order to build a more useful typology based on these fundamental differences, we expand on earlier work on HMOs' risk arrangements with their primary care physicians. This article reviews the conceptual framework for this research, describes our updated survey, summarizes the results of this survey, and describes two alternative typologies. Finally, we suggest ways in which these typologies could be further defined and implemented. As HMOs grow

and continue to assume an important place in the American health care system, it is crucial that a common understanding of their organizational design be accepted.

II. PREVIOUS SURVEYS OF FINANCIAL INCENTIVES IN HMOs

There are two immediate public policy reasons for investigating the financial incentives that HMOs give physicians. The first is derived from the rapid growth in physician expenditures over the last decade, even after controlling for increases in the population and prices. Gaining control of payments to physicians is a major problem Medicare and employers will face over the next 5 to 10 years. A mechanism to control physician expenditures is financial incentives, and HMOs are one of the few working models of financial incentives for physicians. Hence, HMOs' experience with incentives could help in the design of policies for the fee-for-service sector.

A second reason is the fear that incentives will lower quality of care. Concern about financial incentives for physicians in HMOs led to the provision in the Omnibus Budget Reconciliation Act of 1986 which prohibited HMOs from making incentive payments to physicians. Other parts of the legislation regarding hospital payments to physicians have now taken effect, but the ensuing debate on HMO payments has led to postponement of this part of OBRA's implementation until April 1990. The HMO industry has defended incentives as critical to their viability, whereas critics charged that such arrangements imperil the best interest of the patient.

Three studies have been conducted in response to this policy debate. ICF performed a Congressionally mandated study for the Department of Health and

Human Services. Group Health Association of America (GHAA), the HMO trade association, conducted a survey of its members in conjunction with Blue Cross and Blue Shield Association, which has a number of HMOs. Finally, Hillman (1987) conducted an independent mail survey.

The intent behind these data collection efforts was to describe the ways HMOs pay physicians. Since arrangements that are common have passed some kind of market test, there is a presumption that they may be successful in containing costs and maintaining consumer satisfaction. In any case, identifying the characteristics of different payment arrangements is a precondition for investigating their impact on physicians' use of medical services.

These surveys have added considerably to our knowledge about how physicians are compensated by HMOs, but are imprecise in a potentially important area: they did not distinguish between HMOs that contract directly with physicians (two-tier HMOs) and HMOs that contract with intervening entities such as medical groups, which each then contract with physicians (three-tier HMOs). For example, a primary care physician may ultimately be paid fee-for-service even though the HMO pays capitation to the middle tier. Surveying three-tiered HMOs is more difficult than two-tiered HMOs. If one asks a three-tiered HMO, "How do you compensate your physicians?" the answer may describe the relationship between the HMO and the middle tier, or between the middle tier and the individual physician.

In addition, none of the existing surveys adequately addresses the risk pool within which physicians make their expenditure decisions. The size and nature of the risk pool is a fundamental way in which HMOs are differentiating

themselves and could have a major impact on costs. To address these limitations of earlier work, we fielded a fourth survey.

III. CONCEPTUAL FRAMEWORK GUIDING THE SURVEY

In improving upon the instrument (Hillman, 1987) to gather data on risk arrangements facing HMO physicians, we identified five dimensions of risk:

- o How physicians are paid for primary care services;
- o Whether HMO physicians see only HMO patients or whether they also see fee-for-service (FFS) patients covered by traditional indemnity insurance;
- o The nature of the HMO's financial contract with its middle tier, if any;
- o The nature of the risk or reward to primary care physicians; and
- o The size and nature of the risk pool used to share the risk or reward.

How Primary Care Physicians Are Paid

The physician who is the coordinator of an HMO enrollee's care--and therefore the gatekeeper of service expenditures--is the primary care physician. Authorizing and controlling the amount of specialist care, like the amount of other services, is included in this gatekeeper function. Thus, HMOs focus their major cost control efforts on primary care physicians. For this reason, we followed earlier work (e.g., Hillman, 1987; GHAA, 1987) by focusing on how primary care physicians are paid.

Primary care physicians are paid three ways (Glaser, 1970):

- o salary,
- o fee-for-service, and
- o capitation.

HMOs use all three methods. Under capitation, the physician receives a fixed monthly payment per enrollee and is responsible for providing (or paying other physicians for) all primary care physician services. This arrangement should be distinguished from the premium (i.e., capitation payment) that a consumer or employer makes to the HMO in that the premium covers the cost of most medical care, including hospital services.

The financial incentives differ by the method of payment. Under FFS a physician can increase his or her gross income by providing more services. Under salary and capitation, additional services entail more work but no additional income. Capitated physicians have the incentive to increase the number of patients, whereas salaried physicians do not. When the capitation payment to the physician also covers outpatient tests or specialty referral services, the primary care physician is completely at risk for these services; that is, an additional dollar of cost of these services translates into a dollar less income. The capitated physician has a strong incentive to control costs of those services, whereas the salaried physician has no such incentive.¹

Needless to say, these differences between incentives under capitation and salary are mitigated by other factors—capitated physicians' incentive to contain costs is mitigated by the incentive to attract patients, and salaried physicians' lack of explicit incentives to increase panel size and contain

1. Several Medicaid programs capitate physicians for primary care services or for all physician services (Welch, 1989). These arrangements are called partial capitation.

costs is mitigated by how their organizations hire and pay physicians. Other financial arrangements or organizational characteristics also modify the basic incentives of these three types of payments.

Whether the Physician Sees Patients Covered by Traditional FFS Insurance

A potentially important distinction among HMOs is whether HMO physicians see a substantial number of patients covered by traditional indemnity insurance as well as HMO patients, or whether they see only HMO patients. In the prevailing typology, these two types may be called Individual Practice Association (IPA) and Prepaid Group Practice (PGP), respectively. (A comparison is made with Interstudy's typology below.)

A system under which a physician sees both types of patients entails fewer impediments to switching insurance types for both physician and patient. The physician can join an HMO without losing his or her current patients. Some patients can join an HMO without having to break ties with their physicians, which has been a major impediment to HMO enrollment (Berki and Ashcraft, 1980). An HMO that permits physicians to see non-HMO patients presumably can recruit physicians and consumers more rapidly than other HMOs. However, physicians who treat only HMO patients may be more responsive to financial incentives offered by the HMO than physicians with both types of patients, because in the latter case the incentives are diluted by the presence of patients with traditional insurance. More generally, the percentage of HMO patients in a physician's panel may correlate with a physician's responsiveness to financial incentives.

The HMO's Contract with its Middle Tier (If Any)

As already noted, HMOs can contract directly with their primary care physicians (a two-tier system) or they can contract with another organization (a middle tier), which in turn contracts with physicians (a three-tier system). This middle tier is often a medical group that is organized separately from the HMO, practices as a group in a single location, and treats FFS patients under traditional insurance as well as HMO patients. The HMO may share risk with the medical group as an organization. The medical group then makes its own payment arrangements with its individual physicians. The HMO is not necessarily involved in these arrangements and sometimes (according to our survey) is ignorant of its provisions. Under Interstudy's (1988) definition, each group model HMO contracts with a single physician group, whereas network HMOs contract with several groups.

Distinguishing two- and three-tier HMOs does more than improve the precision with which the incentives to individual physicians are measured; it may also describe differences in organizational incentives that affect outcome. Compare, for example, an HMO that pays salary directly to its physicians with an HMO that capitates a middle tier, which pays salary. The three-tiered HMO gives its middle tier's management the incentive to control physicians' use of services and its method for doing so may include some nonfinancial incentives for physicians.

There is a long-standing debate concerning the advantages of group relative to solo practice, quite distinct from HMOs. Groups may have advantages of formal structures reviewing either cost or quality and of informal structure due to the physicians practicing in close proximity. This

may have an impact on cost and quality of care (e.g., Eisenberg and Kabacene, 1988). If so, it may be useful for a typology to incorporate risk pools and tiers.

The Nature of the Risk or Reward

Risk arrangements in HMOs usually distinguish among three types of medical services:

- o primary care services (usually delivered by primary care physicians such as internists),
- o referral services (usually delivered by specialist physicians), and
- o hospital services (not including physician services).

Primary care physicians in HMOs are often given incentives to control the costs of specialty physicians and hospital care as well as their own costs. HMOs often withhold a certain percentage of the payment (often 20 percent) due to the physician. The withhold is returned to the primary care physician if, at the end of the year, costs of referral and hospital services are on or below target. If they are above target, the withhold is used to finance the difference between actual costs and the target. The withhold represents the maximum downside risk for the physician in most HMOs, although some HMOs may levy an additional penalty for higher costs (Hillman, 1987).

If actual costs are lower than the target, primary care physicians may share in the surplus in addition to receiving the withheld income. These incentives may apply to referral services only, hospital services only, or both.

The Size and Nature of the Risk Pool

The size and nature of the risk pool to which a given physician belongs may have an important effect on the incentive for that physician to control costs. The smaller the risk pool and the more aware the physician is of the activities of other physicians in the pool, the stronger the incentive to control costs. The effect of the number of physicians is termed the "size principle" (e.g., Newhouse, 1973). A pool can contain few physicians (even a single physician) or many (even all physicians on the HMO). And they can be assigned to risk pools in various ways (such as by geographic area or hospital affiliation).

It is important to note that a middle tier and a risk pool are independent concepts. An HMO may contract directly with physicians but subdivide them into separate risk pools. Such an HMO has no middle tier but multiple risk pools. Another HMO may contract with a number of medical groups rather than individual physicians, but may spread the financial risks over all the physicians in the HMO, regardless of their medical group. Such an HMO has one risk pool that includes all the groups in the middle tier.

IV. THE SURVEY

The survey instrument was designed to distinguish the payment that the HMO makes directly to physicians, the payment it makes to a middle tier (if any), and the payment that a middle tier makes to the physician. Information was

requested about the size and nature of the risk pool. We used information on enrollment from Interstudy (1988), a private research organization that collects and studies data on HMOs.²

Most questions in the survey pertained to financial arrangements with primary care physicians only, which is appropriate because, as the gatekeepers of care in HMOs, they are typically the primary target of the financial incentives. In addition, we asked only about the predominant financial arrangement of an HMO with its physicians.

We mailed the survey to the 643 active HMOs listed by Interstudy as in existence in mid-1988. The first mailing was in December 1988. To HMOs that did not respond, a second form was mailed in February. Starting in mid-February, follow-up phone calls were made to nonrespondent HMOs with enrollment of at least 50,000.

Out of 643 HMOs in the Interstudy universe, 260 HMOs supplied us with usable responses. The response rate is 40 percent of the HMOs. However, because of the telephone follow-up, larger HMOs are overrepresented in our sample. Thus, our data represent 53 percent of overall HMO enrollment. Table 1 presents the response rate by several HMO characteristics from Interstudy. Of the four model types, the response rate is greatest for the group model, reflecting the fact that Kaiser Permanente responded for all 12 of its plans. The response rate differs only slightly by federal qualification but greatly by profit status.

2. Respondents were promised confidentiality. In the results section of this paper, we sometimes illustrate with reference to specific HMOs. In all cases, the information is available publicly and was not obtained through our survey.

Characteristics of Respondents and Nonrespondents

Note: Interstudy data pertain to June 1988.

Surveys were excluded as unusable when responses about both the number of tiers and the method of payment by the HMO itself were missing. Several HMOs were able to specify that they had a three-tier system but did not know the method of payment by the middle tier to individual physicians. Because three-tiered HMOs are an important focus of the survey, we included these responses.

The prevalence of financial incentives can be characterized in terms of the number of HMOs with a set of incentives or the enrollment that these HMOs represent. We report our results in terms of enrollment, because the national impact of a physician incentive is proportionate to the number of enrollees affected. If, for instance, an incentive arrangement is used by many small HMOs, that arrangement is probably less important overall than arrangements used by a few large HMOs.

The differential response rate by profit status, in particular, may bias our estimate of the prevalence of incentive arrangements. A common solution to this problem of differential response is weighting by cell (Cox and Cohen, 1985). For instance, if we weighted only by profit status, for-profit HMOs would be weighted by the inverse of .31, and nonprofit HMOs, by the inverse of .74, because their response rates were 31 and 74 percent, respectively. Then the weighted enrollment of the respondents would equal the enrollment of the universe. Because response rates vary by characteristics other than profit status, in principle these characteristics could be used for weighting. But as the number of cells increases, the number of HMOs in each cell decreases and may become zero. We weight by profit status and model type. (The smallest of the eight cells has 8 HMOs.) The tables present the percent of weighted

enrollment. Weighting increases our confidence in the representativeness of estimates of the prevalence of incentive arrangements.

V. SURVEY RESULTS

We discuss our results according to the five dimensions used to design the survey. In the next section, we use these results to consider new typologies for classifying HMOs.

How Primary Care Physicians Are Paid

Table 2 provides information on the method of payment to physicians by the number of tiers used to make this payment. Hillman (1987) and GHAA (1987) found that almost half of the responding HMO plans paid capitation for physician services. In 35 percent of the plans in the present survey, physicians are ultimately paid capitation. If this discrepancy is not due to differences in the samples, some plans pay capitation to a middle tier, which in turn pays physicians in some other way. We show below that four-fifths of three-tiered IPAs pay capitation to their middle tiers. Hence, the prevalence of capitation reported in the earlier surveys appears to capture how the HMO paid rather than what the individual physician ultimately received.

When payment arrangements are weighted by the number of enrollees rather than by the number of HMO plans, we found that only a fifth of enrollees are in plans whose physicians receive capitation. Two-fifths of total HMO enrollment is accounted for by HMOs that pay salary and a third by FFS; the remaining 8 percent by HMOs that do not know how their middle tier pays physicians. Since the larger plans typically pay salary, the proportion of enrollees in plans

Table 2
Method of Payment by Number of Tiers
(percent in parentheses)

Payment to Primary Care Physicians	2-tiered HMOs		3-tiered HMOs		All HMOs	
	<hr/>					
	<hr/> <div>Plans</div> <hr/>					
Salary	23	(9)	36	(14)	59	(23)
Capitation	75	(29)	17	(7)	92	(35)
FFS	69	(27)	24	(9)	93	(36)
<u>Do not know</u>	<u>0</u>	<u>(0)</u>	<u>16</u>	<u>(6)</u>	<u>16</u>	<u>(6)</u>
Total	167	(64)	93	(36)	260	(100)
	<hr/> <div>Enrollment (000s)^a</div> <hr/>					
Salary	1,434	(13)	6,363	(27)	7,797	(40)
Capitation	1,873	(11)	1,250	(9)	3,123	(20)
FFS	3,051	(24)	1,157	(8)	4,208	(32)
<u>Do not know</u>	<u>0</u>	<u>(0)</u>	<u>1,451</u>	<u>(8)</u>	<u>1,451</u>	<u>(8)</u>
Total	6,358	(48)	10,221	(52)	16,579	(100)

^a Enrollment figures pertain to the HMOs that responded. For percentages, each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status.

whose physicians receive salary is larger than proportion of plans whose physicians receive salary.

Whether the Physician Sees Patients Covered by Traditional FFS Insurance

We asked HMOs what proportion of their primary care physicians' patients are HMO enrollees.³ In all surveyed HMOs whose physicians receive FFS or capitation, physicians see both HMO patients and FFS patients covered by traditional insurance. Most of the enrollment in HMOs whose physicians receive salary, in contrast, have physicians who see only HMO patients. Specifically, 40 percent of HMO enrollment is in HMOs that ultimately pay salary; this enrollment is split into the 4 percent of total enrollment in HMOs whose physicians see both HMO and traditional FFS patients, and 36 percent in HMOs whose physicians see only HMO patients.⁴ Whether physicians see traditional FFS patients in addition to HMO patients is an important conceptual distinction. Empirically, it is highly correlated with method of payment.

Whether an HMO's physicians see traditional FFS patients distinguishes two types of HMOs. As stated above, we refer to these types as PGPs (whose primary

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3. The respondents were offered five possible answers, the highest proportion being 81-100%.
 4. An example of such an HMO is Maxicare of Texas (Kulkarni et al., 1989). In 1983, Maxicare contracted with the Kelsey-Seybold Clinic, established in the 1950s, to establish Maxicare of Texas. Prior to its contract with Maxicare, the clinic saw only FFS patients under traditional insurance but paid its physicians' salary. Maxicare pays the clinic capitation for all physician services. (Surpluses and deficits in a separate hospital fund are split 50-50 between the clinic and Maxicare.) Thus, primary care physicians at the Kelsey-Seybold Clinic are paid salary but treat both traditional FFS and HMO patients. The Greater Marshfield Community Health Plan is another example of an HMO whose physicians are paid salary but who see FFS patients (Luft, 1981). It has been renamed Security Health Plan of Wisconsin (Interstudy, 1988).

care physicians do not see both types of patients) and IPAs (whose primary care physicians do see both types). The rest of this section focuses on IPAs, because IPAs have the bulk of the enrollment and because the literature has paid far less attention to them than to PGPs.

The HMO's Contract with Its Middle Tier (If Any)

Three-tiered HMOs have half of total HMO enrollment (Table 2). The three-tiered HMOs that pay salary are largely categorized by Interstudy as group and staff models. It is not well recognized, however, that physicians in many three-tiered HMOs do not receive salary. As our data indicate, one quarter of total enrollment is in three-tier HMOs whose physicians receive either capitation or FFS or in three-tiered HMOs that are so decentralized that they pay the middle tier but could not describe how their physicians are finally paid.

In three-tiered HMOs, payment flows first from the HMO to the middle tier and then from the middle tier to the physician.⁵ We consider how three-tiered HMOs pay their middle tiers before elaborating on the incentives directly given the physician.⁶

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5. We did not ask the nature of the middle tiers, but most three-tiered HMOs (excluding those that pay salary) have the medical group as the risk pool. Although middle tier and risk pool are different concepts, this figure suggests that most middle tiers are medical groups.
 6. The Health Insurance Plan (HIP) of Greater New York is a well-known example of a three-tier HMO. HIP contracts with 8 medical groups, which have 51 medical centers (HIP 1988 Annual Report). On average each medical group has 100 primary care physicians. HIP pays capitation to each medical group, which then pays a salary to the HIP physicians, who see only HMO patients. The capitation covers virtually all physician services. HIP relies on utilization review to control hospital costs.

Four-fifths of enrollment in three-tiered IPAs is in HMOs that use capitation to pay their middle tier for primary care services (Table 3). A tenth use FFS and another 8 percent use capitation in combination with FFS. The nature of arrangements in which the HMO pays FFS to the middle tier is unclear from our data; the arrangements may involve middle tiers serving as fiscal intermediaries only without substantial involvement in medical care. Of the enrollment in IPAs that pay capitation to their middle tier, most include outpatient tests in that capitation. The appendix shows how three-tiered IPAs pay their middle tiers for referral and hospital services.

The Nature of the Risk or Reward

Incentives to physicians to control cost can involve both risk and reward. With risk, physicians stand to lose some income (relative to a baseline amount); the mechanism for this is usually a withhold. With reward, physicians can gain income; the mechanism for this is usually a bonus that involves surpluses in referral funds.

Table 4 shows the relationship between having a withhold and having a bonus for referral services. A majority of enrollment in IPAs have a withhold, and a minority have a bonus. Of IPAs whose physicians receive salary, withholds are rare but bonuses are common. Of enrollment in IPAs whose physicians receive capitation, 45 percent have both a withhold and a bonus and only 6 percent have neither. In contrast, of enrollment in IPAs whose physicians receive FFS, only 23 percent have both a withhold and a bonus, while 16 percent have neither. Also, fewer IPAs whose physicians receive FFS have a bonus than IPAs whose physicians receive capitation (29 percent versus 57

Table 3

Three-Tiered IPAs: Methods of Payment
for Primary Care Services

(row percent of enrollment^a)

Middle Tier Payment to Physician	HMO Payment to Middle Tier			Total
	Capitation ^b	FFS	FFS & Capitation ^b	
Salary	89	11	0	100
Capitation	98	0	2	100
FFS	50	26	24	100
Do not know	95	3	2	100
All three-tiered IPAs	82	10	8	100

^a Each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status.

^b The middle tier receives a capitation payment for primary care services.

Table 4
Method of Payment by Risk/Reward
in IPAs
(Percent of panel enrollment^a)

	No Bonus ^b	Bonus ^b	Total
<u>All IPAs^c</u>			
No Withhold	13	10	23
Withhold	33	28	61
<u>Missing</u>			<u>16</u>
Total	46	38	100
<u>IPAs That Pay Physicians Salary</u>			
No withhold	45	43	88
Withhold	1	3	4
<u>Missing</u>			<u>8</u>
Total	46	46	100
<u>IPAs That Pay Physicians Capitation</u>			
No withhold	6	12	18
Withhold	19	45	64
<u>Missing</u>			<u>18</u>
Total	25	57	100
<u>IPAs That Pay Physicians FFS</u>			
No withhold	16	6	22
Withhold	53	23	76
<u>Missing</u>			<u>2</u>
Total	69	29	100

^a Each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status.

^b Bonus from specialty referral fund.

^c Includes IPAs that do not know how their physicians are paid.

percent of enrollment), yet more have a withhold. Withholds are typically 20 percent; they never exceed 30 percent.

The Size and Nature of the Risk Pool

Table 5 shows the number of primary care physicians per risk pool. (Although risk pools may include specialists, we exclude them to maintain comparability.) Risk pools that are subgroups of physicians in an IPA have an average of 34 primary care physicians per pool, whereas pools that are all the physicians in an HMO have an average membership more than 15 times larger! The size of the risk pool varies less by method of payment than by whether or not there is a subdivision. Among HMO-wide risk pools, IPAs whose physicians receive FFS have far more physicians in a pool than other IPAs.

Whether an IPA subdivides its physicians into risk pools may make more of a difference in terms of the number of physicians in the pool than in terms of the direct incentive given each physician. In an HMO-wide risk pool, the individual physician bears an infinitesimally small portion of any additional cost he or she causes. In an average-sized subgroup risk pool of 34 physicians, the physician is at risk for 1/34 or 3 percent of cost. This small increase in individual risk might not be expected to have a major effect on physician behavior. However, putting a subgroup of physicians at risk might cause the subgroup as a group to change its members' behavior. Due to peer pressure and incentives internal to the subgroup, physician behavior may be changed by "group-incentive" effects.

Table 6 shows the distribution of types of risk pool by method of physician payment. Of IPAs paying physicians by salary, most (64 percent) of

Table 5
Size of Risk Pools in IPAs
(Number of Primary Care Physicians^a;
Sample Size in Brackets)

Payment to Primary Care Physicians	Risk Pool	
	HMO Subgroup	All Physicians in HMO
Salary	41 [5]	61 [6]
Capitation	32 [29]	199 [27]
FFS	34 [22]	732 [46]
Do not know	34 [9]	63 [3]
All IPAs	34 [65]	573 [82]

^a Each HMO's value is weighted by its enrollment divided by the response rate of its model type and profit status.

Table 6
Method of Payment By Risk Pool
in IPAS

(Column percent of enrollment^a)

Risk Pool	Payment to Primary Care Physician				
	Salary	Capitation	FFS	Do Not Know	All HMOs
Self	6	23	9	1	12
HMO Subgroup	13	58	36	91	48
Medical Group	11	24	12	84	25
Area	0	6	5	0	4
Hospital	0	3	8	0	5
Other	2	25	11	7	14
All Physicians in HMO	64	13	42	3	30
Missing	17	6	13	5	10
All IPAs	100	100	100	100	100

^a Each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status.

the enrollment is accounted for by risk pools that include all physicians in the IPA. For 17 percent the type of risk pool is unknown, leaving only 19 percent of the enrollment under some other system.⁷ For IPAs paying their physicians by capitation, the situation is rather different. Slightly over half of the enrollment is in IPAs in which some subgroup of physicians comprise the risk pool, the most common form being a medical group. A quarter of enrollment is in IPAs in which individual physicians accept the risk and 13 percent is in IPAs in which the risk pool is all physicians in the IPA. For IPAs in which physicians receive FFS the most common form of risk pool is all physicians in the IPA (accounting for 43 percent of the enrollment). The type of risk pool is unknown for 13 percent of the enrollment under FFS physician payment. Almost all (92 percent) of the IPAs that do not know how their physicians are ultimately paid (three-tier IPAs by definition) have IPA subgroup risk pools, most of which also are medical groups.

These figures contrast with the distribution by number of IPAs (not shown) rather than by enrollment. A smaller proportion of IPAs in which physicians receive capitation has a subgroup as the risk pool (39 percent vs. 58 percent of enrollment); a smaller proportion of IPAs that pay FFS to their physicians also has a subgroup risk pool (25 percent vs. 36 percent of enrollment). Clearly the larger the IPAs, the more likely they are to have subgroup risk pools.

7. Some HMOs give their physicians no explicit risk. But in the long run, an HMO's financial viability and hence its ability to compensate its physicians depends on the cost-containment efforts of those physicians. Because this situation is similar to an explicit risk pool including all physicians, we consider no explicit risk pool as equivalent to a pool with all physicians.

The survey also asked IPAs what they call their subgroup risk pools to find out the industry's terms for this type of risk pool. There is no generally agreed-upon term. Of those IPAs with a subgroup risk pool, these terms were used with the following frequencies (weighted by enrollment):

- IPAs, 26%
- primary care groups, 9%
- medical groups, 24%
- both IPAs and medical groups, 9%
- risk (or incentive) pools, 6%
- networks, 9%
- other names, 17%.

The first three names appear most frequent because the survey offered respondents the first three terms and allowed others to be written in. Not only does the industry use a diversity of terms to describe subgroup risk pools, it also uses the term "IPA" ambiguously, to mean either the HMO as an entity or a subgroup within an HMO.

VI. TOWARD A NEW TYPOLOGY

We believe that the prevailing typology for classifying HMOs can be improved. In the 1970s, there were three types: staff models that hire physicians directly, group models that contract with a single physician group practice, and IPA models that contract directly with physicians in private practices. In 1981, Interstudy added a fourth type, the network model,

to describe an HMO that contracts with two or more group practices. GHAA (1989, p. 7) has suggested the need to modify the current typology:

"Current definitions do not appear to consider explicitly such important variables and influences on performance as the extent of physician commitment to the plan in terms of share of practice, whether delivery is through a multi-specialty group practice or not, and the type of contractual arrangement between the plan and the physicians."

The network and IPA categories are most problematic, because they have evolved to the point of being heterogeneous in terms of the characteristics that GHAA identified.

We wish to devise a typology that could better serve as the basis of public discussion of the HMO industry. To serve that purpose, the theoretical underpinnings of the typology must reflect characteristics that can be collected by an annual census of HMOs. As sociologists Alonso and Starr (1987) note, "Statistics are lenses through which we form images of our society." For instance, despite the fact that the statistical definition of poverty has a number of technical problems (Jencks, 1987), our image of poverty in America is shared by these statistics.⁸

A new typology should have the following characteristics:

- It should be defined in terms of easily obtained, objective characteristics. For an HMO census to use a typology on a regular basis, the typology must rely on information that is easy to obtain for virtually all HMOs.
- It should be parsimonious in its types of HMOs. The typology must be simple enough to facilitate general discussion of HMOs. One way to do so is to distinguish only types that have a substantial proportion of HMO enrollment.

8. Even when conceptually invalid, statistics can have major impacts on thought. Gould argues (1981) that intelligence as a single-dimensional reality is the result of large-scale testing of IQ.

- It should define types, each with clusters of characteristics besides those used to define the type.
- It should predict performance measures such as enrollment growth, cost, and quality.⁹

Devising a typology involves tradeoffs between these criteria.

A key characteristic of an HMO is whether its physicians maintain a substantial proportion of FFS patients under traditional FFS insurance. We defined prepaid group practices to be HMOs whose physicians do not accept traditional FFS patients and IPAs to be HMOs whose physicians do see such patients.¹⁰ As defined here, PGP includes most staff and group models under the Interstudy typology, and our typology incorporates this term because it describes a fairly homogenous group of HMOs. In devising a typology for the rest of HMOs (what Interstudy calls network and IPA models), there are three characteristics that might be used: the method of physician payment (salary, capitation, FFS), the nature of the risk pool (self, HMO subgroup, or all physicians in the HMO), and the number of tiers used to make the payment.

Although one might distinguish HMOs with "self" as the risk pool, there are two reasons for not doing so: Congress may prohibit such arrangements for HMOs participating in Medicare or Medicaid, which may have a broader effect in the industry. Second, because of the strong incentive to limit referrals under such an arrangement, we suspect that some HMOs might not be willing to be

9. Tiryakian (1986) mentions these criteria except the first. See also Sokal (1974).

10. In devising terminology, one faces a choice between creating new terms, of which the HMO industry has too many already, and using established terms, which may not have the precise meaning that we need. We, therefore, use established terms when possible, sometimes defining these slightly differently from other people.

identified publicly as having risk pools comprised of individuals. Collecting the data to implement a typology using risk pools comprised of individuals physicians would be difficult.

The three characteristics yield 14 possible HMO types in addition to PGPs (see Table 7). Of the 14 possible IPA types, four are essentially null sets, leaving 10 IPA types plus PGPs, which is probably too many for an HMO census. The number of HMO types could be reduced further by one of two strategies: dropping one of the variables (method of payment, tiering, or risk pool) or by less systematic collapsing of cells, for example, based on the enrollment of HMOs in the cell. Three more cells could be deleted because of small enrollment: all IPAs paying salary could be combined, two-tiered IPAs paying capitation could be combined, and the three-tiered IPAs paying FFS could be combined. Although believing it would be premature for this paper to present a single typology, we do offer two possible typologies as examples of how cells can be collapsed.

Incentive-Based Typology

This typology would reflect a strategic decision to base the typology on financial incentives as reflected by three variables: whether physicians see traditional FFS patients, method of payment, and risk pool. This typology involves dropping the number of tiers as a defining variable. In a pure economic framework, physician behavior would be the same regardless of the intermediate steps taken to deliver the financial reward for services rendered. This approach yields 8 types (including PGPs). Given the subtotals in Table 7, we collapse these types further. Because there is little enrollment IPAs whose

Table 7
Possible IPA Types
(percent of IPA enrollment^a)

Tier (by Risk Pool)	Payment to Primary Care Physician				All IPAs
	Salary	Capitation	FFS	Do Not Know	
HMO Subgroup and Self					
Two-tiered	0 ^b	14	18	NA	32
Three-tiered	2	13	7	13	35
Subtotal	2	27	25	13	67
All Physicians in HMO					
Two-tiered	0	4	19	NA	23
Three-tiered	5	0	5	0	10
Subtotal	5	4	24	0	33
All IPAs	7	31	49	13	100

^a To obtain percents of HMO enrollment, multiply these figures by .64, the proportion of HMO enrollment in IPAs. Each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status. HMOs not indicating a risk pool are excluded.

^b Enrollment < 0.5%.

physicians receive salary, we combine those into a single type. Similarly, there is little enrollment in IPAs whose physicians receive capitation and whose risk pools are HMO-wide, so we combine those with other IPAs whose physicians receive capitation. These modifications result in a typology with five types:

Prepaid group practice: HMOs whose physicians see only HMO patients. In all of these HMOs, physicians receive salary. (36% of enrollment)

Salary IPA: IPAs in which physicians receive salary. Most of these HMOs have HMO-wide risk pools. In all of these HMOs, physicians also see FFS patients. (4% of enrollment)

Capitation IPA: IPAs in which physicians receive capitation. Most of these IPAs have risk pools that are subgroups. In all of these HMOs, physicians also see FFS patients. (19% of enrollment)

FFS IPA with subgroup risk pools: IPAs in which physicians receive FFS and have self or subgroups as the risk pool. In all of these HMOs, physicians also see FFS patients. (14% of enrollment)

Foundation-type IPA: IPAs in which physicians receive FFS and have all physicians as the risk pool. In all of these HMOs, physicians also see FFS patients. (14% of enrollment)

Missing in our sample. (12% of enrollment)

An example of each of these types follows:

Prepaid Group Practice: Harvard Community Health Plan (Fox and Heinen, p. 217) pays its physicians a salary and a bonus that relates to planwide financial success. Budgeted bonuses are 6 percent of salaries; in past years, actual bonuses have varied from 0 to 10 percent of salaries.

Salary IPA: Maxicare of Texas (Kulkarni et al., 1989). See discussion above.

Capitation IPA: HMO of PA (Fox and Heinen, 1987, p. 128) pays its physicians capitation that is age-sex adjusted. Each physician has a referral fund. Deficits are covered with the 20 percent withhold and "taxing" of referral funds that have a surplus. Each physician has a hospital fund; the HMO absorbs all losses but splits surpluses 50-50 with the physician.

FFS IPA with subgroup risk pool: Maxicare of Southern California (Fox and Heinen, 1987, p. 87) contracts with medical groups, which typically pay their physicians FFS. Maxicare capitates the groups for physician services, both primary and referral services; the groups are completely at risk for physician services. Maxicare is at risk for hospital services but each group receives half of the surplus in its hospital fund.

Foundation-type IPA: Lifeguard (Fox and Heinen, 1987, p. 167) pays its physicians FFS with a 15 percent withhold. All physicians are in the single risk pool. Any deficit in the physician services account is covered by the withhold; the HMO is at risk for any deficit beyond the withhold and keeps any surplus. Physicians are not at risk for either surpluses or deficits in the hospital account.

Organizational-Structure Typology

A second possible typology would reflect a strategic decision to exclude the method of paying physicians as a defining variable in favor of the number of tiers. The resulting typology is more heavily influenced by the organizational design of the HMO but still incorporates risk pools, an important incentive. The typology would also distinguish HMOs whose physicians see only HMO patients (PGPs). The remaining HMOs (IPAs) would be distinguished

by only two variables: the number of tiers and the size of the risk pool, yielding a total of 5 types:

Prepaid group practice: HMOs whose physicians see only HMO patients. (36% of enrollment)

Two-tiered IPA with subgroup risk pools: These IPAs contract directly with physicians and subdivide them into risk pools. (18% of enrollment)

Two-tiered IPA without subgroup risk pools: These IPAs contract directly with physicians and place them into a single risk pool. (14% of enrollment)

Three-tiered IPA with subgroup risk pools: These IPAs pay (usually) medical groups, which in turn pay physicians. The physicians are subdivided into risk pools. (20% of enrollment)

Three-tiered IPA without subgroup risk pools: These IPAs pay (usually) medical groups, which in turn pay physicians. All physicians are in a single risk pool. (6% of enrollment)

Missing in our sample. (6% of enrollment)

Comparison of Typologies

Table 8 shows enrollment data by the two new typologies as compared with Interstudy's typology (1988). In both new typologies, PGPs closely correspond to Interstudy's staff and group models. A few of Interstudy's group models are considered salary IPAs in the incentive-based typology. Network models are spread over at least three of the incentive-based types: PGP, capitation IPA, and FFS IPA with subgroup. These figures indicate far more diversity than suggested by Interstudy's network definition. Interstudy's IPA model is spread between three of the incentive-based types: capitation IPA, FFS IPA with subgroup, and foundation-type IPA. Again, there is more diversity than suggested by the Interstudy typology.

Table 8
Typology: Proposed Versus Interstudy's
(percent of HMO enrollment)^a

Type	Interstudy Typology				
	Staff	Group	Network	IPA	All HMOs
<u>Incentive-Based Typology</u>					
Prepaid group practice	12.8	21.3	1.5	0.0	35.7
Salary IPA	0.2	3.5	0.6	0.1	4.4
Capitation IPA	0.5	0.3	4.8	13.9	19.4
FFS IPA with subgroup	0.0	0.0	3.2	11.1	14.4
Foundation-type IPA	0.0	0.3	0.0	13.4	13.7
Missing	<u>0.0</u>	<u>0.2</u>	<u>7.9</u>	<u>4.3</u>	<u>12.3</u>
Total	13.5	25.7	18.0	42.8	100.0
<u>Organizational-Structure Typology</u>					
Prepaid group practice	12.8	21.3	1.5	0.0	35.7
Two-tiered IPA					
with subgroup	0.0	0.0	0.7	17.7	18.4
Two-tiered IPA					
without subgroup	0.1	0.1	0.7	12.8	13.6
Three-tiered IPA					
with subgroup	0.5	0.5	13.7	5.6	20.2
Three-tiered IPA					
without subgroup	0.0	2.9	0.2	2.6	5.7
Missing	<u>0.0</u>	<u>1.0</u>	<u>1.2</u>	<u>4.2</u>	<u>6.4</u>
Total	13.5	25.7	18.0	42.8	100.0

^a Each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status.

Considering the organizational-structure typology, we find close correspondence between Interstudy's network and our three-tiered IPA with subgroup. Interstudy's IPAs, however, are spread over three types: two-tiered IPAs with subgroups, two-tiered IPAs without subgroups, and three-tiered IPAs with subgroup. Thus, both the incentive-based and organizational-structure typologies highlight diversity that the Interstudy typology obscures.

We now review the two new typologies in terms of the criteria stated above. First, both typologies are based on obtainable information. HMOs would have to answer only a few questions: whether their physicians see traditional FFS patients, whether they pay their physicians directly or through a middle tier, whether the HMO has more than one risk pool,¹¹ and how the primary care physicians are paid. (This last question is not necessary for the organizational-structure typology.) Second, each of the new typologies has only five types.

Third, the incentive-based typology correlates with structural characteristics not used to define the types. As noted above, the HMOs whose physicians receive salary and those whose physicians receive capitation or FFS clearly differ in terms of whether their physicians see traditional FFS patients. The IPAs whose physicians receive capitation versus FFS differ in a number of dimensions: (1) Among three-tiered IPAs, IPAs whose physicians receives capitation often receive half of the savings in hospitalization,

11. We have avoided the sensitive topic of self risk pools. If some HMOs are still afraid of public information on method of payment and risk pool, information could be obtained from the contracts that an HMO signs with its many physicians. Alternatively, regulators (such as the federal Office of Prepaid Health Care) or employment-based health insurance programs (such as the Federal Employees Health Benefit Program) could require such information.

whereas IPAs whose physicians receive FFS rarely do (see appendix table A.2).

(2) IPAs whose physicians receive capitation are more likely to have a bonus and less likely to have a withhold (Table 4). (3) Foundation-type IPAs have 20 times as many primary care physicians in their risk pools as FFS IPAs with a subgroup risk pool (Table 5) and are more likely to include specialists in those pools (extension of Table 5).

The organizational-structure typology presumably captures a number of structural characteristics through the tiering variable. In addition, the number of primary care physicians in a risk pool is 15 times greater for IPAs with HMO-wide pools than for IPAs with subgroup pools (Table 5).

Fourth, we consider several performance measures arrayed across typologies (Table 9): hospital days per 1000 enrollees, referrals to specialists per enrollee, whether the HMO was profitable the prior year, and enrollment growth. The age of the plan is added as an implicit control variable.

In the Interstudy typology, networks and IPAs are similar in most measures: for instance, the specialty visits per person are 1.66 and 1.77, respectively. (This variable is missing for 44 percent of the HMOs in Table 9). The range is greater for IPAs under the new typologies: specialty visits range from 1.43 to 2.01 under the incentive-based typology, and from 1.51 to 1.96 under the organizational-structure typology.¹² Similarly, enrollment growth differs somewhat between Interstudy's network and IPA, 16.1 percent

12. Not only is physician expenditure in Medicare growing rapidly but also the most rapid growth pertains to specialists (e.g., cardiologists; Mitchell, Wedig, and Cromwell, 1989). For this reason, limiting referrals to specialists will be a key aspect of cost containment for HMOs in the future.

Table 9

Comparison of Typologies in Terms of Performance Measures

	Hospital Days/1000	Specialty Visits	Whether Profitable	Enrollment Growth%	Plan Age	N
<u>Interstudy Types</u>						
Staff	376	1.53	.48	3.9	16.2	27
Group	373	1.41	.94	7.7	35.6	29
Network	309	1.66	.53	16.6	10.3	39
IPA	359	1.82	.68	21.9	6.7	165
<u>Incentive-Based Types</u>						
Prepaid group practice	375	1.44	.75	5.8	31.0	41
Salary IPA	375	1.46	.77	18.2	8.2	18
Capitation IPA	359	1.75	.58	22.7	7.5	92
FFS IPA with subgroup	343	1.58	.86	29.3	7.1	34
Foundation-type IPA	369	2.01	.75	19.5	7.1	47
<u>Organizational- Structure Types</u>						
Prepaid group practice	375	1.44	.75	5.8	31.0	41
Two-tiered IPA with subgroup	357	1.51	.74	29.7	6.7	69
Two-tiered IPA without subgroup	373	1.79	.65	20.9	6.8	64
Three-tiered IPA with subgroup	312	1.72	.62	12.2	10.0	40
Three-tiered IPA without subgroup	360	1.96	.84	23.2	7.5	22

The figures pertain to means in 1988. Each HMO is weighted by its enrollment divided by the response rate of its model type and profit status.

versus 22.4 percent. For IPAs under the incentive-based typology, enrollment growth ranges from 14.2 percent for salary IPAs to 29.3 for FFS IPAs with a subgroup risk pool. Under the organizational-structure typology, it ranges from 12.2 percent for three-tiered IPAs with subgroup risk pool to 29.7 percent for two-tiered IPAs with a subgroup risk pool. The abilities of typologies to distinguish differences in performance vary among the performance measures. But the new typologies both appear superior to Interstudy's typology.

VII. FUTURE RESEARCH

One of the weaknesses of our survey is that it asks only about the predominant arrangement for compensating physicians. The world, unfortunately, is more complicated: Many HMOs have multiple arrangements with physicians and some might best be labeled hybrid HMOs.¹³ GHAA (1989) found that 37 percent of established plans were hybrid HMOs. An important issue for future research is to recognize hybrid HMOs and to determine how they function.

Second, the impact of different types of HMOs on cost and quality deserves further investigation. Two groups of scholars have already made valuable beginnings in this respect. Clancy and Hillner (1989) investigated the ordering of diagnostic tests by physicians who saw HMO patients and FFS

13. For instance, early on the Johns Hopkins Health Plan had four clinics capitated for Medicaid and physicians were paid salary (Richard Hegner, Johns Hopkins Health Plan, 6/16/89). In order to grow, the HMO had begun in 1985 to contract with FFS physicians or groups. By 1989 it had 38 other sites, ranging from practices with one or two physicians to multispecialty group practices. Typically, physicians are capitated for primary care services plus ancillaries, and the HMO shares risk for referral and hospital services. The clinics with salaried physicians now constitute only one-third of the enrollment.

patients under traditional insurance. The HMO capitated its primary care physicians for the HMO patients and placed them in a HMO-wide risk pool. The authors found that HMO patients had fewer discretionary tests but the same number of preventive tests as their FFS counterparts. In addition, Hillman, Pauly and Kerstein (1989) regressed hospital days per 1000 and physician visits per enrollee on financial incentives, controlling for HMO and market characteristics. They found that paying primary care physicians salary or capitation lowered the hospitalization rate compared to paying FFS, and placing physicians in self risk pools lowered the frequency of physician visits.

Future investigations might follow one of two strategies. One alternative would be to analyze expenditure data of one large HMO (or one HMO chain) with a variety of reimbursement arrangements for different physicians. The other strategy would be to analyze a national data set based on the typologies presented here. The strength of the former approach is that it provides superior measures of both incentives and expenditures; the strength of the latter approach is generalizability.

APPENDIX

Three-Tiered IPAs: Methods of Payment for Referral and Hospital Services

Table A.1 shows how three-tiered IPAs pay their middle tiers for referral services. If referral expenses are below a target amount, IPAs may give physicians a percentage of the surplus as a bonus. If referral expenses are above a target, IPAs may retain some or all of the withhold. The strongest incentives occur under capitation, where the middle tier is at risk for all surpluses and deficits. Of the enrollment in IPAs whose physicians receive salary, one-third is in IPAs that capitate their middle tiers for all physician services. Of the enrollment in IPAs whose physicians receive capitation, half is in IPAs that do so and they almost always give their middle tiers some incentive to control referral costs. Relative to IPAs whose physicians receive capitation, IPAs whose physicians receive FFS are less likely to include referral services in the capitation payment (20 vs. 50 percent of enrollment) and more likely to give no incentive (35 vs. 3 percent of enrollment). Of the enrollment in IPAs that do not know how their physicians are paid, 59 percent is in IPAs that include referral services in the capitation payment to their middle tiers.

Table A.2 presents the incentives that IPAs give their middle tiers to control hospital costs. Perhaps the most striking thing is that IPAs rarely include hospital costs in their capitation payment, although capitation is the prevailing method of payment for primary care services and a common method for

referral services. For three-tiered IPAs as a group, three approaches are used in roughly equal proportions of enrollment: bonuses, other incentives, and no incentive. The bonuses are typically a 50-50 split of savings, and other incentives might be payment based on hospital days. IPAs whose physicians receive capitation rely most heavily on bonuses, but many have other incentives. IPAs whose physicians receive FFS usually have some other incentives. In IPAs that do not know how their physicians are paid, both bonuses and other incentives are used. IPAs whose physicians receive salary either use capitation or have no incentive.

Table A.1

Three-Tiered IPAs: Methods of Payment
for Referral Services(row percent of enrollment)^a

Middle Tier Payment to Physician	No Bonus		Bonus ^b		Capitation ^d	Total
	No	W/hold ^c	No	W/hold		
Salary	48	1	6	11	34	100
Capitation	3	19	6	22	50	100
FFS	35	34	0	11	20	100
Do not know	27	2	8	4	59	100
All three- tiered IPAs	25	16	5	12	42	100

^a Each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status.

^b The middle tier retains a percent (typically 50%) of any surplus.

^c The HMO withholds a percent of its payment for referral services. This withhold covers any deficit.

^d The middle tier receives a capitation payment for referral services and hence retains 100% of any surplus.

Table A.2

Three-Tiered IPAs:
Incentives on Hospital Services
(row percent of enrollment)^a

Middle Tier Payment to Physician	Bonus ^b			Capitation ^c	Other Incentives	Nothing	Total
	1-40%	41-60%	61-99%				
Salary	5	10	0	27	4	55	100
Capitation	4	50	5	0	23	18	100
FFS	10	1	1	1	64	23	100
Do not know	0	30	0	0	41	29	100
All three- tiered IPAs	5	24	2	4	37	28	100

^a Each HMO's enrollment is weighted by the inverse of the response rate of its model type and profit status.

^b The middle tier retains a percent of any surplus.

^c The middle tier receives a capitation for hospital services and hence retains 100% of any surplus.

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16. Abstract (Limit: 200 words) The prevailing typology for classification of health maintenance organizations (HMOs) does not adequately distinguish among these entities. In order to develop a better typology, we surveyed HMOs for CY 1988 regarding the financial incentives that they give their physicians. Financial incentives reflect fundamental differences among HMOs in the way they are organized and in how they contract with physicians. The responding HMOs (N=260) had a majority of the enrollment in the industry. Many HMOs does not directly pay physicians, rather they pay a middle tier, which in turn pays physicians. These three-tiered HMOs capitate their middle tiers for primary care services and often for referral services. The middle tier then pays its physicians salary, capitation, or fee-for-service. Whether it has two or three tiers, an HMO may create a risk pool of physicians. In Individual Practice Associations (IPAs) subdivided into several risk pools, those pools average 30 physicians; in IPAs with all its physicians in one pool, those pools average 15 times as many physicians. We consider two alternatives to Interstudy's typology of HMOs. Both alternatives differentiate IPAs subdivided into several risk pools and IPAs with a single risk pool. On alternative typology classifies IPAs by how physicians are paid (salary, capitation, and fee-for-service); the other classifies IPAs by the number of tiers. Both alternative typologies better distinguish HMOs by performance measures—such as specialty visits per enrollee and enrollment growth—than does Interstudy's typology.				
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